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ABSTRACT

Direct instruction (DI), a predetermined and systematic approach to the teaching/learning process, is advocated for teaching precise responses in the most efficient way to preschool handicapped students. Planning for DI includes specifying task sequences leading to a terminal behavior. Specific steps are followed in the presentation and curriculum materials used. Grouping and classroom organization information is provided. A list of suggested direct instruction skills and rules for training concludes the document. Skills include attention signals, instances and non-instances, response signals, feedback, reinforcers, pacing, pauses, rhythm, response rates, volume, body language, enthusiasm, attention span, stimulus change, surprises, intentional mistakes, and mastery. (CL)

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# A Generic Approach to Direct Instruction

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New skills and technologies are continuously accruing from the growing knowledge of events that influence learning. It is the purpose of this paper to present a set of principles that underly some of these skills and technologies and thereby facilitate the teaching/learning process. These principles are referred to as the process of direct instruction (DI).

Direct instruction is defined as a pre-determined and systematic method of instructional delivery which is designed to maximize the efficiency of the teaching/learning process. The teaching part of this process is both pre-determined and precise. The efficiency of the teaching/learning interaction is measured by the rate and accuracy of student responses.

It is recommended that direct instruction be employed when teaching outcomes are clear and behaviorally stated, and the measureable responses of the children are the criteria for determining the level of successful teaching/learning. It is not suggested that the entire school day be spent in the direct instructional process; rather, when the goal is to teach precise responses in the most efficient way, DI techniques are recommended.

One of the obvious goals for pre-school handicapped children is to master self-help skills at the level needed to participate to the

fullest extent possible with normal children in the regular classroom when they enter first grade. It is our experience that many of these skills deficiencies can be corrected by teaching the skills at a faster rate than these children would normally learn them. Skills in the areas of dressing, expressive language, and motor training are often taught without planning, consistency, or thought about the level of independence needed by the child after he/she leaves the nurturance of the preschool environment.

Before engineering a direct instruction sequence, a tremendous amount of planning and rehearsal is necessary, for each step in the direct instruction process occurs quite rapidly. It is typical to elicit four to eight responses per minute, minimum, from each child within the instructional group. The result is an increased number of response opportunities for slower children. DI prerequisites include: a determination of the necessary learner information through psycho-educational assessment; a curriculum match statement; learning contracts (including behavioral/instructional objectives and related curriculum materials); behavior management systems; student grouping; classroom engineering; and accountability strategies.

Many curriculum materials do not provide the necessary planning or directions. Therefore, we suggest that the teacher be prepared to develop or modify any existing plans by completing a task sequence planning form and teacher behavior presentation planning form to insure consistency in the presentation. The task sequence planning form is used to identify a terminal self-help behavior. The terminal behavior is operationalized into a behavioral objective. The behavior is then

broken down or task analyzed into from two to nine sequential steps which lead up to performance of the terminal behavior. The steps in the task analysis are stated only in performance terms, with completion of the previous task becoming the stimulus for the following step. The student progress level per period of instruction is charted by circling the number of the instructional period which corresponds to the highest level of performance demonstrated by all the children in the group.

The teacher behavior presentation planning form is used to identify specific applications of the DI components needed for teaching the behaviors in the sequence identified on the task sequence planning form. A teaching routine of teacher presented signals and demonstrations, child responses and teacher feedback is developed. This routine should incorporate those DI skills suggested by learner information.

Particular attention should be given the column on the teacher behavior presentation planning form labeled "Teacher Input, instances/non-instances." For teaching each skill in the task sequence, consideration must be given to new concepts which are to be learned. The presentation and curriculum materials used need to observe the following rules:

1. Concepts are not taught in the abstract. Instances must pinpoint observable characteristics.
2. Concepts must be taught through more than one instance.
3. The presentation must never vary or change the determined discriminative characteristics when presenting instances.
4. The presentation must vary the non-discriminative characteristics when presenting instances.

5. The presentation must include both positive and negative instances of the concept being taught.

The sequence of the tasks presented to the children should also follow these rules:

1. First, present introductory tasks using instances which have the discriminative characteristics of the concept but vary the non-discriminative characteristics.
2. Second, present contrasting tasks using non-instances.
3. Third, provide terminal, or application - tasks to determine if the child has reached the stated terminal behavior.

It is critical in using DI with young children to use language that is familiar from prior learning. The teacher should also place those concepts that are difficult to discriminate from one another in the final part of the instructional sequence.

The suggested student grouping procedure involves three separate groups of three to five children each, with the classroom engineered into a minimum of three centers. Center one is the direct instruction center from which the teacher presents all direct instruction. Center two is supervised by an aide and provides an opportunity for the repetition of concepts taught in Center one. Center three is the mastery center in which students work independently on concepts previously acquired in Centers one and two. It is the purpose of each direct instruction activity to introduce new concepts at a rate which will provide the slowest member of the group with functional mastery of the self-help skills presented.

A typical direct instruction presentation is designed for fifteen minute time periods. Thus, during a typical fifty minute class period, all three instructional groups rotate through the direct instruction centers. By the time students have rotated through the three centers, a tremendous amount of concept repetition has occurred. It is this teacher specified repetition that facilitates long term mastery of the concepts taught.

Direct instruction consists of the following 18 skills. Most of these skills will be used in every direct instruction presentation. However, due to the uniqueness of objectives and materials to be used, some presentations will not use all the direct instruction techniques discussed. Nonetheless, the objective is for the teacher to master all 18 direct instruction techniques and incorporate as many as possible into every direct instruction presentation.

The following is a list of suggested Direct Instruction skills.

Direct Instruction Skills

1. Attention Signals

The basic principle is that before a teacher can efficiently teach a student anything, the teacher must have the student's attention. Most teachers however were never taught how to obtain student attention and dismiss the idea as impossible. Obtaining the attention of all students in a small group is a relatively simple process. However, this feat requires some planning and teaching. Students frequently learn that it is unnecessary to attend in order to obtain reinforcement. Students learn quickly from the teacher and each other that when they do not attend they come up winners more often than losers.

Rules:

1. Train student attention early. Ideally the training of student attention would be consistent throughout school from kindergarten through 12th grade.
2. Develop a variety of attention signals or cues.
3. Teach the desired student response(s) to selected signal(s).
4. Never begin instruction until all students are attending.
5. Immediately reinforce those students who respond to the attention signal.
6. Never accidentally reinforce the non-attending student with attention that could be interpreted as positive.
7. Ensure that the stimulus that follows each attention signal is reinforcing to the students. If what follows the attention signal is consistently boring or irrelevant, the attention signal will soon lose its effectiveness.

Examples of attention signals include: visual: teacher raises one hand; teacher turns light off and on rapidly; etc. Auditory: teacher says "listen," or "look"; or sounds a buzzer or bell; etc. Attention signals should be practiced several times before using.

Example:

Teacher: "I have something new to share with you today. When I hold my hand up like this (teacher models), it means stop what you're doing, sit up in your chairs, and listen to me".

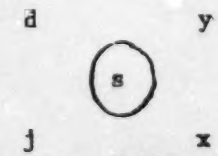
2. Instances and Non-Instances

Whenever the concept being taught allows, it is advisable to teach that concept in a two-step operation. First, teach what the concept is. For example, if the teacher is attempting to teach the color red, the logical first step would be to select some red object and present it to the group and say "This is red!" Most teachers do this well. The problem is that most teachers stop here; but this is teaching only instances of the concept. It is equally important to teach what red is not. This process forces the teacher to teach cleanly; that is, on concept at a time. It also facilitates student learning.

Rules:

1. Teach what the concept is. Give several examples (instances) of the concept.
2. Teach what the concept is not. Give several non-examples (non-instances) of the concept.

A suggested format for an instance/non-instance presentation is shown below. The sound being taught is "s".



Example:

Teacher: Pointing to the s in the center of the group of letters, teacher says, "This is 'sssssss'."

After repeating the above several times:

Teacher: "Group, what is this; it is _____?

Student: "sssssss"

Teacher: "Good." The pointing to another letter, teacher says, "Is this 's'?"

Student: "No."

Teacher: "Good, you are right!"

3. Response Signals.

To facilitate teacher control of the student group it is necessary to program which students will respond at what time to a given stimulus. To do this, the teacher must develop and use signals which elicit responses from students. The general rule is: wait until you see the student response signal before responding.

Rules:

1. Develop a variety of response signals.
2. Develop signals which elicit both individual and group responses.
3. Teach what the signal means through modeling, reinforcement, and CONSISTENCY.
4. Never accept a response from a student to whom a signal was not presented. Do not be guilty of accidentally reinforcing inappropriate behavior, even occasionally.
5. Immediately reinforce students who have responded on cue for: a. waiting for the cue; and b. the accuracy of the response.

if followed immediately by the desired response, is effective and without harm. The principle is, when a response is given by the student, the teacher reinforces the response if it is acceptable or immediately corrects the response if it is unacceptable.

Rules:

1. Provide feedback immediately. If a response needs correcting, do so with a simple "no".
2. Provide props or cues to ilicit a correct response, or model the correct response for the student.
3. Use a variety of reinforcers for correct responses.
4. Praise specific behavior rather than non-specific behavior. Example: "Good counting!" rather than "Good job!".
5. Ensure that a positive to negative feedback ratio is never less than three-to-one.
6. Ensure that reinforcers are reinforcing to the recipient.

Examples of feedback include: visual: displaying an accepted manual sign which conveys the intended meaning; body language to convey the intended meaning; etc. Auditory: presenting selected verbal reinforcers for appropriate responses; saying "no", and model the correct response; etc.

Examples:

Teacher: "Who has the answer to this problem?" (4 + ? = 5) Teacher gives response signal (points to Bill, and says "Bill".

Student: "Nine."

Examples of response signals include: visual: pointing to a student with a finger or hand; using a pointer; using an exaggerated sweeping hand motion for group response; etc. Auditory: calling a student by name; giving such cues as "everyone," "group", etc.

By controlling student responses the teacher can easily individualize response rate, increase or decrease reinforcement, and control the amount of student repetition and general rate of instruction.

Examples:

Teacher: "When I want you to respond, I will call your name and point to you" (teacher models). "If I want everyone to answer I will say 'everyone' and point like this" (teacher makes a sweeping motion toward the group).

Teacher: Repeats the response signals instructions; then:

Teacher: "Bobby, what does this mean?" (pointing to Bobby).

Bobby: "I can talk".

Teacher: "Super, you remembered the rule".

4. Feedback

The concept of providing feedback to learners is universally accepted. To effectively use the feedback process the teacher must: a. elicit a high rate of student response, and b. react to each student response in a way the student is able to judge the adequacy of his or her response.

Some teachers feel that correcting a student's response will cause psychological harm to the student. This is a false assumption. To respond to a student's incorrect response with a simple "no", especially

Teacher: "No, the answer is '1'. What is the correct answer?"

Student: "It's '1'."

5. Reinforcers

Positive reinforcement is one of the basic tools of behavior change, and as such is the premier change agent available to teachers. Every teacher should program the activities of each school day in such a way that every student in the classroom receives a tremendous amount of reinforcement. It is essential to the direct instruction process that students receive both primary and secondary reinforcement as necessary (see Chapter 28 for primary and secondary reinforcers).

Rules:

1. Use a variety of reinforcers during each direct instruction presentation.
2. Use a tremendous amount of verbal reinforcement.
3. Use physical reinforcement. Touch students.
4. Ensure that each student receives at least three positive reinforcers to each instance of negative feedback.

6. Pacing

Learning occurs when one reacts to the stimuli being presented. Effective pacing of instructional delivery can be a tremendous aide in eliciting reactions and maintaining attention to concepts presented. Instructional pacing is defined as variance in the rate of instruction. By preplanned and continuous variance of the rate of instruction, the teacher can facilitate increased student attention and reaction to what is being presented.

Rules:

1. Teach fast: Direct instruction should proceed at a faster rate than non-direct instruction.
2. Vary the pace of instruction. When a particular point is to be made, either increase or decrease the rate of instruction. Students will predictably respond with increased attention and learning.

7. Pauses

The effective use of planned pauses (actual stops) during instuction can be effective at recapturing the wandering attention of students or emphasizing a particular point. Pauses are effective almost any time, but are particularly valuable: 1. after attention signals are presented; 2. after a question has been asked and before a response signal is given; 3. immediately before a major point is made; or 4. immediately after a major point has been made.

Rules:

1. Plan pauses into the content of instruction.
2. Pair pauses with other methods of instructional control.
3. Use body language to emphasize the effect of pauses.

Pauses, especially when coupled with proper pacing, can be an effective measure of attention control.

8. Rhythm

Rhythm is defined as the cadence or flow of the instructional delivery. Instructional rhythm is distinguished from pacing in that rhythm involves the cadence of instruction, whereas pacing involves the rate of instruction. Rhythm, in conjunction with pacing, pauses,

and volume, are three of the four basic tools of the actor. Thus the process of designing and delivering a good direct instruction presentation closely approximates the designing and acting out of a good one-act play. In order to establish an acceptable instructional rhythm, the teacher should vary the cadence of the instruction: loud, soft, fast, slow, stop, etc.

Rules:

1. Use a variety of pacing, volume, and intentional pauses in order to construct the desired instructional rhythm.
2. Practice.

9. Response Rates.

Response rate is defined as the frequence of student responses. Just as student attention is a necessary part of the instructional process, so is a high rate of student response.

Rules:

1. Plan a presentation which requires a minimum of 30 verbal or graphic responses per student for each fifteen minute direct instruction session.
2. Provide feedback for student responses.
3. Monitor responses to ensure a minimum of 80% accuracy.

When the accuracy of response falls below 80%, consider it a signal that instruction is inadequate. Give honest feedback relative to the accuracy of student responses.

10. Volume

No single direct instruction concept is more effective at holding attention and eliciting student response than the effective varying of

volume or loudness with which an oral lesson is presented. Increase and decrease volume as appropriate when emphasizing a point of instruction. Alternating from LOUD to soft (voice inflection) is DYNAMITE!

Rules:

1. Plan variance of volume as part of instructional content.
2. Pair with other methods of instructional control, especially pacing and pauses.
3. Use appropriate body language to accompany volume variance.
4. Practice.

11. Body Language

Body language is defined as the planned use of body-part movements for the purpose of increasing teaching effectiveness. Body language can be used to accentuate a point, reinforce a student, facilitate the correction of a student response, etc. Body language involves but is not limited to: planned motion of the hands and/or feet; proximity of the body relative to the student; facial gestures; etc.

To this point eleven fundamental skills of direct instruction have been identified. Mastery of these eleven skills constitutes the most work for the beginning student of direct instruction. If one is successful at mastering these first eleven skills, those skills that follow can be easily accommodated into teaching methodology. As such the remaining seven direct instruction skills will be discussed more briefly than the preceding skills.

12. Enthusiasm.

Teacher enthusiasm is contagious, and inspires student attention, motivation, and learning. Enthusiasm can be conveyed by voice volume,

inflection, and rate; body language; mood; responsiveness; active listening; facial expression; etc.

Rules:

1. Be genuine and natural with your use of enthusiasm signals.
2. Use a combination of enthusiasm signals whenever possible, such as smile, body gestures, and voice inflection.
3. Combine positive reinforcement with enthusiasm signals.
4. Do not reinforce non-target behavior with enthusiasm signals.

13. Attention Span.

Students, even those with short attention spans, attend to various stimuli with varying degrees of attention for varying periods of time. Student attention span is therefore relative to the concept being taught, the stimulus materials being used, and the skill of the teacher. Nonetheless, when student attention is less than 80% direct intervention is called for.

Rules:

1. Prior to the beginning of instruction, select some method of continuously assessing student attention level.
2. During instruction, monitor the attention level of each student.
3. When any student attends less than 80% of the time, intervene.
4. Attention problems are problems with instruction, not the students.

14. Stimulus Change.

Stimulus change is defined as the teacher presentation of new stimuli to which students are expected to respond with a frequency equal to that of the student with the shortest attention span in the group. Too frequently one stimulus is presented to which all students

are expected to attend for the duration of the planned instruction. The stimulus change idea is to present new and changing stimuli at a frequency which maintains a high degree of student attention.

Plan to change stimuli frequently, and plan a variety of stimuli. When a student's attention begins to wander, present a new stimulus to which the student is expected to respond. A variety of reinforcing and well-used stimuli related directly to attention span.

Rules:

1. Plan every presentation in such a way that the primary stimulus changes at least every five minutes (or more frequently with problem students).
2. Use a variety of stimuli that are known to be reinforcing to the students.
3. Plan at least three different activities for each fifteen minutes of instruction.
4. When any attention level in the group fails to reach 80%, change the stimulus.

15. Surprises.

Students, from kindergarten through secondary level, enjoy surprises. Most teachers, however, fail to utilize this effective method of maintaining or reobtaining student attention. Examples of surprises could include: dropping a book; breaking a pencil; slapping the desk or table; etc. The point is, when attention begins to fall below 80%, do something different, such as create a surprise.

Rules:

1. Plan at least one surprise for every fifteen minute presentation.

2. Practice surprises before instruction.

3. Develop a list of surprises that have proven successful for various student ages.

16. Intentional Mistakes.

By making intentional mistakes during a direct instruction presentation, the teacher can accomplish at least two things. First, the teacher can teach, through modeling, that the consequences of making a mistake are not disastrous. Second, students appear overjoyed at discovering teacher errors. Such mistakes, especially if the students have been alerted to deliberate teacher mistakes, will increase student motivation and attention span.

Rules:

1. Make a minimum of two intentional mistakes during each presentation.

2. Once the mistake is made, continue instruction as if the mistake had not been made unless students discover the error.

3. Once the mistake is discovered by students, act surprised. Praise the student or students responsible for "catching" the mistake.

4. Encourage the students to continue to look for errors.

Examples of intentional mistakes include: putting a letter on the felt board upside down; misspelling a word on the chalkboard; leaving a word out of a sentence; an incorrect answer to a math problem, etc.

18. Mastery.

Ensure that those concepts elected for teaching are worthy of being taught. Briefly, teach only necessary concepts. Then ensure mastery

of all concepts taught.

Rules:

1. Select and teach only necessary concepts.
2. Require mastery before proceeding with additional instruction.